CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 92-083
REVISING ORDER NO. 88-123

SITE CLEANUP REQUIREMENTS FOR:

FAIRCHILD SEMICONDUCTOR CORPORATION
MICRO POWER SYSTEMS, INC.
THE PRUDENTIAL INSURANCE COMPANY OF AMERICA

for the property located at
3080/3100 ALFRED STREET
SANTA CLARA, SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board) finds that:

1. Site Location and Description Fairchild Semiconductor Corporation, Micro Power Systems, Inc., and The Prudential Insurance Company of America (hereinafter also referred to as the dischargers), are or have been involved with facilities located at 3080 and 3100 Alfred Street, Santa Clara, California. The Alfred Street facility is located in the north-central portion of the City of Santa Clara. The site is approximately 600 feet south of Highway 101 and 1.3 miles west of the Guadalupe River (Figure 1).

   The Alfred Street site covers approximately 2.5 acres and is located in a zoned light industrial/commercial area. The closest residential area is a mobile trailer park located north of Highway 101.

2. Site History and Regulatory Status The primary land use in the study area historically has been agricultural. Fairchild Semiconductor Corporation (Fairchild) is a former tenant at 3080 Alfred Street and occupied the property from 1975 through 1983. Micro Power Systems, Inc. (Micro Power) is the current tenant of 3080/3100 Alfred Street; they have occupied the 3100 address since 1972 and subsequently leased the 3080 property in 1984 after it was vacated by Fairchild. The Prudential Insurance Company of America is the current property owner. Both Fairchild and Micro Power manufactured, assembled, and tested semiconductors. Micro Power's current operations involve only assembly and testing; they ceased their manufacturing process in March 1990.

Subsurface investigations initiated in March 1982 revealed the presence of various industrial chemicals in groundwater at the facility. These chemicals included trichloroethylene (TCE), 1,1,1-trichloroethane (TCA), cis-1,2-dichloroethylene (DCE), 1,1-DCE, 1,1-dichloroethane (DCA), and Freon 113.

Both Fairchild Semiconductor Corporation and Micro Power Systems, Inc. are named as dischargers based on their occupancy at the site, and based upon chemical usage data and soil and groundwater investigations; it has been determined that both Fairchild and Micro Power have contributed to the release of chemicals to the groundwater at the Alfred Street facility.

The Prudential Insurance Company of America is named as discharger because they are current owner of the site and will be responsible for compliance only in the event that Fairchild and Micro Power fail to comply with the requirements of this Order. If additional information is submitted indicating that any other parties caused or permitted any waste to be discharged on the site where it entered or could have entered waters of the State, the Board will consider adding that party's name to this Order.

3. **Board Orders and Permits** The Board has adopted the following orders and permits for the Fairchild/Micro Power Alfred Street facility:

- Waste Discharge Requirements Order No. 86-90, adopted November 19, 1986; amended June 18, 1987
- Waste Discharge Requirements, Order No. 88-006 (NPDES Permit No. CA0029271), adopted January 20, 1988; revised November 1, 1990
- Site Cleanup Requirements Order No. 88-123, adopted July 20, 1988; rescinding Order No. 86-90

4. **History of Site Investigations**

Site Hydrogeology The site stratigraphy has been investigated to a depth of approximately 75 feet. Two water-bearing zones, designated as A and B aquifer zones, are both located beneath an upper clay layer which ranges from eight to 20 feet below ground surface (bgs). The A aquifer extends to depths of between ten to 30 feet bgs and is interbedded with silt and silty clay layers, is highly variable and discontinuous. The water-bearing zones within the A aquifer zone vary from sand seams as thin as two inches to 25 foot layers of coarse sand and gravel.

An extensive aquitard of approximately 16 to 31 feet thick lies beneath the A aquifer and separates the A and B aquifers.

The B aquifer zone is generally found at depths of 50 to 60 feet bgs. The aquifer soils range from poorly graded to well-graded sand and gravel.

Groundwater elevation contours indicate that the hydraulic gradients in both the A and B aquifers are oriented toward the northeast. Water table data indicate that the B aquifer elevation in the vicinity of the site is higher than that in the A aquifer, and since measurements have been taken at the site, an upward hydraulic gradient appears to exist from the B to the A aquifer. Pump test data also indicate that A and B aquifers are not interconnected.

The upper aquifer is not being used as a drinking water source. An investigation of private wells in the area as potential conduits was performed in 1987. Only one well, which was sealed by Santa Clara Valley Water District in November 1985, was located within the chemical plume. One well which has not been sealed, was located north of Highway 101 and outside the chemical plume; it was determined to be screened in the B aquifer below 40 feet and had no contaminants present.

Groundwater Initial investigations at the 3080 Alfred Street facility were conducted by Fairchild in March 1982. In July 1985, RWQCB requested additional site investigations be performed when TCE was detected at 2,000 parts per billion (ppb) in an onsite groundwater monitoring well. Site cleanup orders were adopted directing Fairchild, Micro Power, and Prudential to complete various investigation tasks at both 3080 and 3100 Alfred Street and to begin interim remedial actions to control the contaminant plume.

Groundwater data reported to the Board in June 1992 indicates that there may have been a recent release of TCA to the area directly north of the 3080 Alfred Street property boundary, but within the existing plume. TCA concentrations of up to 7,900 ppb were detected in MW-30, several orders of magnitude higher than reported in historical groundwater data. The dischargers believe that the presence of recent high TCA concentrations are from a source north of their site, yet within the capture zone of their existing extraction well RW-1.

To date, 34 groundwater monitoring wells have been installed in the A aquifer. The predominant chemicals in this aquifer were determined to be TCE and TCA. The lateral extent of the plume in the A aquifer extends approximately 600 to 700 feet beyond the property boundary towards Highway 101, and may continue beneath it. The chemical analyses in the A aquifer wells just north of Highway 101 have generally not detected any contaminants, except in well 34 which has concentrations of indicator chemicals ranging from 2.3 to 43 ppb.

However, it appears the plume boundary is well-defined enough to institute final remediation at the site, and the proposed alternative is believed to improve containment of the plume in that area.

To define the vertical extent of volatile organic compounds (VOCs) in groundwater, five monitoring wells have been installed in the B aquifer. VOCs have been detected sporadically and at concentrations not greater than 4.2 ppb for any single constituent.

Soils Limited soil sampling and analysis was performed in the vadose zone in 1982 and 1987 during installation of groundwater monitoring wells adjacent to the acid neutralization system (ANS) sumps and adjacent to Highway 101. Results indicated the presence of isopropyl alcohol, methanol, and methylene chloride, none of which are the predominant contaminants at the site.

Additional soil sampling occurred during onsite investigation of the sewer line as a potential pathway for chemical migration. The soil samples taken adjacent to the line were in the proximity of selected monitoring wells to compare soil and groundwater chemical data. Results indicated that the sewer line did not appear to be acting as a conduit for migration of chemicals. Analytical results for soil indicated all samples were below 1 part per million (ppm) VOCs.

Contaminant Source Investigation The potential sources investigated involved two acid neutralization systems and the onsite portion of a sanitary sewer line. Since 1983, no spills or leaks were documented at the site; no records regarding chemical handling exist prior to that time.

Two acid neutralization systems were utilized at the site. One sump was located on the west side of 3080 Alfred Street. The sump, constructed of unlined concrete, was removed in 1984. The bottom of the sump was located within the upper zone of the A aquifer. A second, lined concrete sump is located on the northwest corner of 3100 Alfred Street and is currently being used by Micro Power. The bottom of this system is located within two feet of the A aquifer.

In addition, a potential conduit study was performed in June 1986 to determine if contaminants migrated via the sanitary sewer lines located north and south of the building at 3080/3100 Alfred Street. Both ANS sumps at the site were connected to City of Santa Clara sewer system where neutralized wastewaters were discharged to Santa Clara's Wastewater Treatment Plant. Although generally low levels of VOCs were detected in material surrounding the sewer line, no correlation could be made to the sewer system as a potential source of contamination.

Interim Remedial Actions In February 1988, the dischargers initiated interim remedial actions to prevent further migration of contaminants in the groundwater. The remedial activity which is currently operating involves extraction of groundwater from the A aquifer from two extraction wells and treatment of the water by air stripping, followed by discharge to the storm sewer tributary to Guadalupe River. This extraction and treatment system appears effective at containing and cleaning up the plume.

5. State Water Resources Control Board Resolutions

State Board Resolution 68-16 On October 28, 1968, the State Board adopted Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California." This policy calls for maintaining the existing high quality of State waters unless it is demonstrated that any change would be consistent with the maximum public benefit and not unreasonably affect beneficial uses. This is based on a Legislative finding, contained in Section 13000, California Water Code, which states in part that it is State policy that "waters of the State shall be regulated to attain the highest water quality which is reasonable." The original discharge of wastes to the groundwater at this site was in violation of this policy.

State Board Resolution 88-63 On May 19, 1988, the State Board adopted Resolution 88-63, "Sources of Drinking Water." This resolution states that all surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply. For purposes of establishing cleanup objectives, the shallow groundwater at the site is designated a potential source of drinking water, and protective levels shall be those levels which have been established as protective for drinking water.

6. Water Quality Control Plan The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on December 11, 1991. The Basin Plan contains water quality objectives and beneficial uses for South San Francisco Bay and contiguous surface and ground waters.

The existing and potential beneficial uses of the groundwater underlying and adjacent to the facility include:

a. Industrial process water supply
b. Industrial service water supply
c. Municipal and Domestic water supply
d. Agricultural water supply

7. **Summary of Site Risk** To develop final remedial actions for the site which would be protective, a baseline public health evaluation (BPHE) and risk assessment was performed by the dischargers, similar to the method used for sites regulated under Comprehensive Environmental Response, Compensation and Liability Act (Superfund). The guidance used in the BPHE was the 1986 Superfund Public Health Evaluation Manual. The steps the dischargers used in the public health evaluation involved determining the primary chemicals of interest and their toxicity, and identifying potential exposure pathways for both current-use and hypothetical-future use scenarios. Once determined, risks were calculated for carcinogenic and non-carcinogenic chemicals in the groundwater, and compared to the EPA acceptable risk range.

Toxicity Classification for Chemicals of Interest Six primary compounds have been detected in the site groundwater. These compounds, classified as indicator chemicals, are: 1,1,1-TCA, TCE, Freon 113, cis-1,2-DCE, 1,1-DCA, and 1,1-DCE. Of these six compounds, TCE and TCA are found at the highest concentration and the widest extent.

Two of the indicator chemicals are classified as carcinogens, three are non-carcinogens, and one, Freon 113, has not been classified. The EPA categories for carcinogenic classification applied to the indicator chemicals are: TCE — a B2 category carcinogen (probable human carcinogen, with inadequate human evidence and sufficient evidence from animal experiments), and 1,1-DCE — a C category carcinogen (possible human carcinogen, limited evidence of carcinogenicity in animals with inadequate human data). Three other chemicals, 1,1,1-TCA, cis-1,2-DCE, and 1,1-DCA are non-carcinogens.

Exposure Assessment Under current use of the site, there appear to be no complete exposure pathways. Although the level of contaminants in the A zone aquifer are greater than drinking water standards, the shallow aquifer is currently not being used for drinking water. The deeper aquifer used for drinking water has not been impacted by site activities.

If changes in site conditions should occur in the future, the shallow groundwater could be utilized for domestic purposes. There is a potential for exposure to organic chemicals from the ingestion of contaminated groundwater if wells were screened in the A aquifer and the groundwater was not treated to remove VOCs. To evaluate the risks from this exposure, groundwater concentrations of VOCs were estimated in an area downgradient of the plume boundary and just north of Highway 101, where a hypothetical drinking water well could be situated in the future. To estimate concentrations of TCE at

several exposure points over a 70-year period, a transport model for movement of VOCs in groundwater was employed for a situation where no further remediation occurs.

Risk Characterization The estimated exposure point concentrations were then used to estimate the potential chemical intake from the hypothetical drinking water well, and from that, public health risks determined. The lifetime hypothetical cancer risk estimates were determined to be 1.9×10^{-4}, or two excess cancer cases in a population of 10,000. EPA's acceptable risk level for carcinogens ranges from 10^{-4} to 10^{-6}, or one in 10,000 to one in 1,000,000 excess cancers in an exposed population.

Using the same exposure scenario, the non-carcinogenic Hazard Index for VOCs from use of shallow groundwater was less than 1.0. EPA's acceptable Hazard Index for a site must be less than or equal to 1.0.

Although the estimated risk from no further cleanup of the groundwater falls at the boundary of EPA's acceptable risk range, the conservative approach would be to protect future beneficial uses of the groundwater by continued remediation to established conservative cleanup standards (e.g., MCLs).

8. Remedial Action Objectives

Groundwater Cleanup standards for indicator chemicals in the groundwater were developed using available drinking water standards. Treatment of the groundwater to state and/or federal maximum contaminant levels (MCLs) will result in an acceptable excess risk of 1.7×10^{-6} and a Hazard Index of less than 1.0.

An additional objective for groundwater is to ensure that the plume is monitored, and that ingestion, absorption through skin, and inhalation of contaminated groundwater is minimized.

Soil The BPHE prepared by the discharger did not identify soil as an exposure medium, however levels of less than 1 ppm of VOCs detected in the backfill materials adjacent to sewer lines indicate that the more permeable soils surrounding those lines could be exposed to the groundwater if the water table elevation changes. Therefore, no complete exposure pathway exists unless utility workers come in contact with the contaminated material. Although no significant public health risk appears to exist, to be conservative the remedial action objective would be to ensure that absorption or inhalation of possible contaminated soils by workers is prevented.

Air The BPHE did not identify indicator chemicals in the air, with the exception of the those chemicals emitted to the air during groundwater treatment; these emissions are regulated under the BAAQMD permit. Therefore, no additional remedial action objectives have been generated for air emissions.

9. Screening of Remedial Technologies The dischargers developed and evaluated a list of possible alternatives for remediating the groundwater emanating from the Alfred Street site. The screening of technologies was based on their applicability to site characteristics, on the properties of the chemicals, and on anticipated performance. The remaining technologies were then further evaluated on the basis of environmental and public health impacts and cost analyses. Final detailed analyses involved implementability, effectiveness, and total project costs.

10. Remedial Actions Based primarily on information contained in the dischargers' report titled "Draft Report - Remedial Action Plan" and its addendum, this Order provides for a final cleanup plan. An addititional requirement, which was not included in the Remedial Action Plan but is deemed protective, is institutional control measures on groundwater and soil beneath the site. The final remedial actions are as follows:

- The final remedial action alternative involves increasing the current capture zone by installing an additional extraction well. Installation of a third extraction well was determined to reduce the areal extent of the plume more effectively than would two recovery wells.

  The dischargers have expressed concern that a third extraction well in the area of MW-30, as proposed in their Remedial Action Plan, may not be the most effective way to remediate the newly-discovered TCA contamination. Regional Board staff will investigate possible additional dischargers in the area and will evaluate Fairchild and Micro Power's proposed extraction well design and location based on any new information that becomes available.

- Continued extraction and treatment of the A aquifer until cleanup standards in this Order (Table 1) are achieved. If cleanup standards cannot be achieved, the discharger must demonstrate to the satisfaction of the Board that it is technically impractical from an engineering perspective and that an alternate proposed level will be protective of human health and the environment. The Order will then need to be modified by the Board to allow a less stringent onsite groundwater cleanup level.

- Long term monitoring of the groundwater will be required after cleanup levels are achieved. The duration and complexity of the monitoring will be determined at that time.

- Institutional controls consisting of site security, worker notification, and a deed restriction which will be filed by Fairchild, Micro Power, and Prudential prohibiting use of onsite groundwater for drinking water until final cleanup standards are achieved. The institutional constraints will also act as a control with respect to exposure to soils and alert utility workers of potential health and safety concerns.

11. Cleanup Standards The groundwater cleanup standards for the site are Environmental Protection Agency MCLs (proposed or adopted) and California Department of Health Services MCLs (proposed or adopted). Applicable MCL Goals (those greater than zero) are also met by the cleanup standards required by this Order. At this time it appears that cleanup of groundwater to below the Maximum Contaminant Levels (MCLs) may be technically impractical due to the difficulties in restoring aquifers with respect to the physical and chemical nature of the contaminants. For this reason, the MCL is acceptable to meet the intent of Resolution 68-16.

12. Future Changes to Cleanup Standards If new information indicates cleanup standards cannot be attained or can be surpassed, the Board will decide if further final cleanup actions, beyond those completed, shall be implemented at this Site. If changes in health criteria, administrative requirements, site conditions, or remediation efficiency occur, the discharger will submit an evaluation of the effects of these changes on cleanup standards as defined in Specification B.4.

13. The dischargers has caused or permitted, and threatens to cause or permit, waste to be discharged or deposited where it is or probably will be discharged to waters of the State and creates or threatens to create a condition of pollution or nuisance.

14. Onsite and offsite containment and cleanup measures need to be implemented and/or continued to alleviate the threat to the environment posed by the continued migration of pollutants and to provide a substantive technical basis for designing and evaluating the effectiveness of final cleanup alternatives.

15. State Board Resolution 88-160, adopted by the Regional Board, strongly encourages the maximum feasible reuse of extracted groundwater from groundwater pollution remediations either by the discharger or other public or private water users. Consideration and implementation of Resolution 88-160 by the discharger is required by Provision C.2.d.

16. This action is an order to enforce the laws and regulations administered by the Board. This action is categorically exempt from the provisions of the CEQA pursuant to Section 15321 of the Resources Agency Guidelines.

17. The Board has notified the discharger and interested agencies and persons of its intent under California Water Code Section 13304 to prescribe Site Cleanup Requirements for the discharge and has provided them with the opportunity for a public hearing and an opportunity to submit their written views and recommendations.

18. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, and Section 25356.1 of the California Health and Safety Code, that the discharger shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

1. The discharge of wastes or hazardous materials in a manner which will degrade water quality or adversely affect the beneficial uses of the waters of the State is prohibited.

2. Further significant migration of pollutants through subsurface transport to waters of the State is prohibited.

3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of pollutants are prohibited.

B. SPECIFICATIONS

1. The storage, handling, treatment or disposal of soil or groundwater containing pollutants shall not create a nuisance as defined in Section 13050(m) of the California Water Code.

2. The discharger shall conduct monitoring activities as determined by the Executive Officer and, should monitoring results show evidence of further plume migration beyond that already identified, or new evidence of soil contamination, additional characterization of the pollutant plume may be required.

3. All Fairchild/Micro Power (Alfred Street site) wells shall be used to determine if cleanup standards have been met; the wells used are determined by the Self-Monitoring Program established under this Order.

B. SPECIFICATIONS, continued

4. Final cleanup standards in Finding 11 shall be met at all onsite and offsite wells. Specifically, the numerical cleanup standards in Table 1 shall not be exceeded in any well.

5. All groundwater extraction systems shall be maintained and kept operational until such time as groundwater extraction is curtailed and/or completed in accordance with the provisions of this Order.

6. Pursuant to section 13304 of the Water Code, the dischargers are hereby notified that the Board is entitled to, and may seek reimbursement for all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, as required by this Order. The dischargers shall reimburse the Board upon receipt of a billing statement for those costs.

C. PROVISIONS

1. The discharger shall submit to the Board acceptable monitoring program reports containing results of work performed according to a program prescribed by the Executive Officer.

2. The discharger shall comply with the Prohibitions and Specifications above immediately except as modified by the time schedule and tasks listed below.

   a. COMPLETION DATE: DECEMBER 31, 1992

      TASK 1: DESIGN FOR EXPANDED GROUNDWATER TREATMENT SYSTEM: Submit a technical report acceptable to the Executive Officer which contains the design for the expanded groundwater treatment and extraction system for the A zone aquifer. This document shall include, but need not be limited to, modelling and/or rationale for the proposed extraction well location, a map of the well configuration, an estimate of the capture zone that can be established by the wells, the rate of pumping that will be required, and how the performance of the system will be evaluated. The document should also include information on the time required for equipment acquisition, estimated time for system

construction, and projected date of implementation. This task should also include completed permit applications to the appropriate agencies.

The Executive Officer may modify the completion date of Task 1 if the dischargers demonstrate to the satisfaction of the Executive Officer that additional time is necessary to complete the design due to delays outside the reasonable control of the dischargers, such as investigation or remedial work related to discharges by other parties.

b. COMPLETION DATE: 180 days after Executive Officer approval of report required in Task 1

TASK 2: IMPLEMENTATION OF EXPANDED GROUNDWATER TREATMENT SYSTEM: Submit a report acceptable to the Executive Officer which describes the test period for the groundwater extraction and treatment system and the status of full implementation of the system.

c. COMPLETION DATE: OCTOBER 17, 1992

TASK 3: GROUNDWATER REUSE AND RECLAMATION: Submit a technical report acceptable to the Executive Officer containing the groundwater reuse and reclamation plan for the treated groundwater. The report shall include documentation of efforts to reuse the water, efforts to secure users for the water, and reasons why potential users would not accept the water and discuss the technical feasibility and cost-effectiveness of other water reuse options.

d. INSTITUTIONAL CONSTRAINTS

1) COMPLETION DATE: DECEMBER 31, 1992

TASK 4: PROPOSED CONSTRAINTS: Submit a technical report acceptable to the Executive Officer documenting procedures to be implemented by the discharger, including a deed restriction prepared by Prudential and filed by Prudential, Fairchild, and Micro Power prohibiting the use of the upper aquifer groundwater as a source of drinking water. The report shall also describe the procedures to be used to ensure worker safety and maintain site security. Constraints shall remain in effect until groundwater cleanup

standards have been achieved and pollutant levels have stabilized in onsite aquifers.

2) COMPLETION DATE: 60 days after Board staff approval of Task 4.

TASK 5: CONSTRAINTS IMPLEMENTED: Submit a technical report acceptable to the Executive Officer documenting that the proposed and approved constraints have been implemented.

e. COMPLETION DATE: JANUARY 31, 1994

TASK 6: EVALUATION OF REMEDIAL MEASURES: Submit a technical report acceptable to the Executive Officer which contains results of the remedial measures and evaluates the effectiveness of the hydraulic containment system and other interim remedial measures. Such an evaluation shall include, but need not be limited to, an estimation of the flow capture zones of the extraction wells, establishment of the cones of depression by field measurements, and presentation of chemical monitoring data for soil and groundwater. The report shall also evaluate the effects of operation of existing extraction wells on groundwater levels, an estimate of the amount of chemicals removed via the extraction systems. This report may be combined with the 1993 annual report.

f. COMPLETION DATE: JUNE 17, 1997

TASK 7: FIVE-YEAR STATUS REPORT AND EFFECTIVENESS EVALUATION: Submit a technical report acceptable to the Executive Officer containing the results of any additional investigation; an evaluation of the effectiveness of installed final cleanup measures and cleanup costs; additional recommended measures to achieve final cleanup objectives and standards, if necessary; a comparison of previous expected costs with the costs incurred and projected costs necessary to achieve cleanup objectives and standards; and the tasks and time schedule necessary to implement any additional final cleanup measures. This report shall also describe the reuse of extracted groundwater and evaluate and document the cleanup of contaminated groundwater. If cleanup standards in this Order have not been achieved onsite and are not expected to be achieved through continued groundwater extraction and/or soil remediation, this

report shall also contain an evaluation addressing whether it is technically practicable to achieve the cleanup standards, and if so, a proposal for procedures to do so.

g. COMPLETION DATE: 90 days after request made by the Executive Officer

TASK 8: EVALUATION OF NEW HEALTH CRITERIA: Submit a technical report acceptable to the Executive Officer which contains an evaluation of how the final plan and cleanup standards would be affected, if the concentrations as listed in Specification B.4. change as a result of promulgation of drinking water standards, maximum contaminant levels or action levels or other health based criteria.

h. COMPLETION DATE: 90 days after request made by the Executive Officer

TASK 9: EVALUATION OF NEW TECHNICAL INFORMATION: Submit a technical report acceptable to the Executive Officer which contains an evaluation of new technical and economic information which indicates that cleanup standards or cleanup technologies in some areas may be considered for revision. Such technical reports shall not be required unless the Executive Officer or the Board determines that such new information indicates a reasonable possibility that the Order may need to be changed under the criteria described in Finding 11.

i. CURTAILING GROUNDWATER EXTRACTION

1) COMPLETION DATE: 90 days prior to proposed curtailment of any or all groundwater extraction well(s) or treatment system

TASK 10: ONSITE WELL PUMPING CURTAILMENT CRITERIA AND PROPOSAL: Submit a technical report acceptable to the Executive Officer containing a proposal for curtailing pumping from any groundwater extraction well and the criteria used to justify such curtailment. Curtailment of groundwater extraction may include, but is not limited to: final shutdown of the system, a phased approach to shutdown, pulsed pumping, or a significant change in pumping rates. The report shall include the rationale for

curtailment or modifying the system. The report for final shutdown of the system shall include data to show that groundwater cleanup standards for all VOCs have been achieved and pollutant levels have stabilized or are stabilizing, and that the potential for pollutant levels rising above cleanup standards is minimal.

If the proposal is a modification to the extraction and treatment system, it is subject to approval by the Executive Officer. If the proposal is substantive curtailment, it is subject to approval by the Board.

If the discharger claims that it is not feasible to achieve cleanup standards, the report shall evaluate the alternate standards that can be achieved, and that the alternative cleanup standards proposed will be protective of human health and the environment.

2) COMPLETION DATE: 60 days after Board or Executive Officer approves curtailment

TASK 11: IMPLEMENTATION OF CURTAILMENT: Submit a technical report acceptable to the Executive Officer documenting completion of the necessary tasks identified in the technical report submitted for Task 10.

3. The submittal of technical reports evaluating interim and final remedial measures will include a projection of the cost, effectiveness, benefits, and impact on public health, welfare, and environment. These evaluations should be consistent with the guidance provided by Subpart F of the NCP (40 CFR Part 300); Section 25356.1 (c) of the California Health and Safety Code; CERCLA guidance documents; and shall be consistent with the State Water Resources Control Board's Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California."

4. If the discharger is delayed, interrupted or prevented from meeting one or more of the completion dates specified in this Order, the discharger shall promptly notify the Executive Officer, and the Board may consider revision to this Order for such delays that are beyond the control of the discharger.

5. Technical status reports on compliance with the Prohibitions, Specifications, and Provisions of this Order shall be submitted quarterly to the Board commencing on October 31, 1992, and covering the

previous three months. Reports shall be submitted on a quarterly basis, until one year after implementation of the expanded groundwater extraction and treatment system. The technical reports may then be submitted semi-annually after the second and fourth quarters thereafter, or as required by the Executive Officer. These reports shall consist of: (1) a summary of work completed since submittal of the previous report and work projected to be completed by the time of the next report, (2) identification of any obstacles which may threaten compliance with the schedule of this Order and what actions are being taken to overcome these obstacles, and (3) include, in the event of non-compliance with any Provision or Specification of this Order, written notification which clarifies the reasons for noncompliance and which proposes specific measures and a schedule to achieve compliance. This written notification shall identify work not completed that was projected for completion, and shall identify the impact of noncompliance on achieving compliance with the remaining requirements of this Order.

These reports shall also identify any problems with or changes in the groundwater extraction system. Additionally, the reports shall include, but need not be limited to, updated water table and piezometric surface maps and plume maps for all affected water bearing zones, and appropriately scaled and detailed base maps showing the location of all monitoring wells and extraction wells, and identifying adjacent facilities and structures.

6. On an annual basis beginning with the report due January 31, 1993, or as required by the Executive Officer, the status report shall include, but need not be limited to, an evaluation of the progress of cleanup measures. A summary of monitoring and sampling data shall also be included in the annual report which can be part of the fourth quarter report.

7. The discharger shall submit technical reports acceptable to the Executive Officer containing revised Quality Assurance Project Plans, Site Safety Plans, and Site Sampling Plans, if requested by the Executive Officer or if deemed necessary. Each revised report shall be submitted within 30 days from the date of staff comments on the draft report.

8. All hydrogeological plans, specification, reports, and documents shall be signed by or stamped with the seal of a registered geologist, engineering geologist, or professional engineer.

9. All samples shall be analyzed by laboratories certified to perform analysis on hazardous materials or laboratories using approved EPA methods or

an equivalent method acceptable to the Executive Officer. All laboratories shall follow EPA guidance "Documentation Requirements for Data Validation of Non-CLP Laboratory Data for Organic and Inorganic Analyses" dated May 1988 for preparation of data validation packages when required by the Executive Officer.

10. The discharger shall maintain in good working order, and operate, as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.

11. Copies of all reports pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order, shall be provided to the following agencies:

    a. Santa Clara Valley Water District
    b. Santa Clara County Health Department
    c. State Department of Toxic Substances Control

The Executive Officer may additionally require copies of correspondence, reports and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order to a local repository for public use. Additional copies of correspondence, reports, and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order shall be provided for public use when requested by the Executive Officer.

12. The discharger shall permit the Board or its authorized representative, in accordance with Section 13267(c) of the California Water Code:

    a. Entry upon premises in which any pollution sources exist, or may potentially exist, or in which any required records are kept, which are relevant to this Order.

    b. Access to copy any records required to be kept under the terms and conditions of this Order.

    c. Inspection of any monitoring equipment or methodology implemented in response to this Order.

    d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the discharger.

13. The discharger shall file a report on any changes in site occupancy and ownership associated with the facility described in this Order.

14. If any hazardous substance, as defined pursuant to Section 25140 of the Health and Safety Code, is discharged in or on any waters of the state, or discharged and deposited where it is, or probably will be discharged on any waters of the state, the discharger shall report such discharge to this Regional Board, at (510) 464-1255 on weekdays during office hours from 8 a.m. to 5 p.m., and to the Office of Emergency Service at (800) 852-7550 during non-business hours. A written report shall be filed with the Regional Board within five (5) working days and shall contain information relative to: the nature of waste or pollutant quantity involved, duration of incident, cause of spill, Spill Prevention, Control, and Countermeasure (SPCC) Plan in effect, if any estimated size of affected area, nature of effect, corrective measures that have been taken or planned, and a schedule of these activities, and persons/agencies notified.

15. The Board will review this Order periodically and may revise the requirements when necessary.

16. Board Order No. 88-123 is hereby rescinded.

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on July 15, 1992.

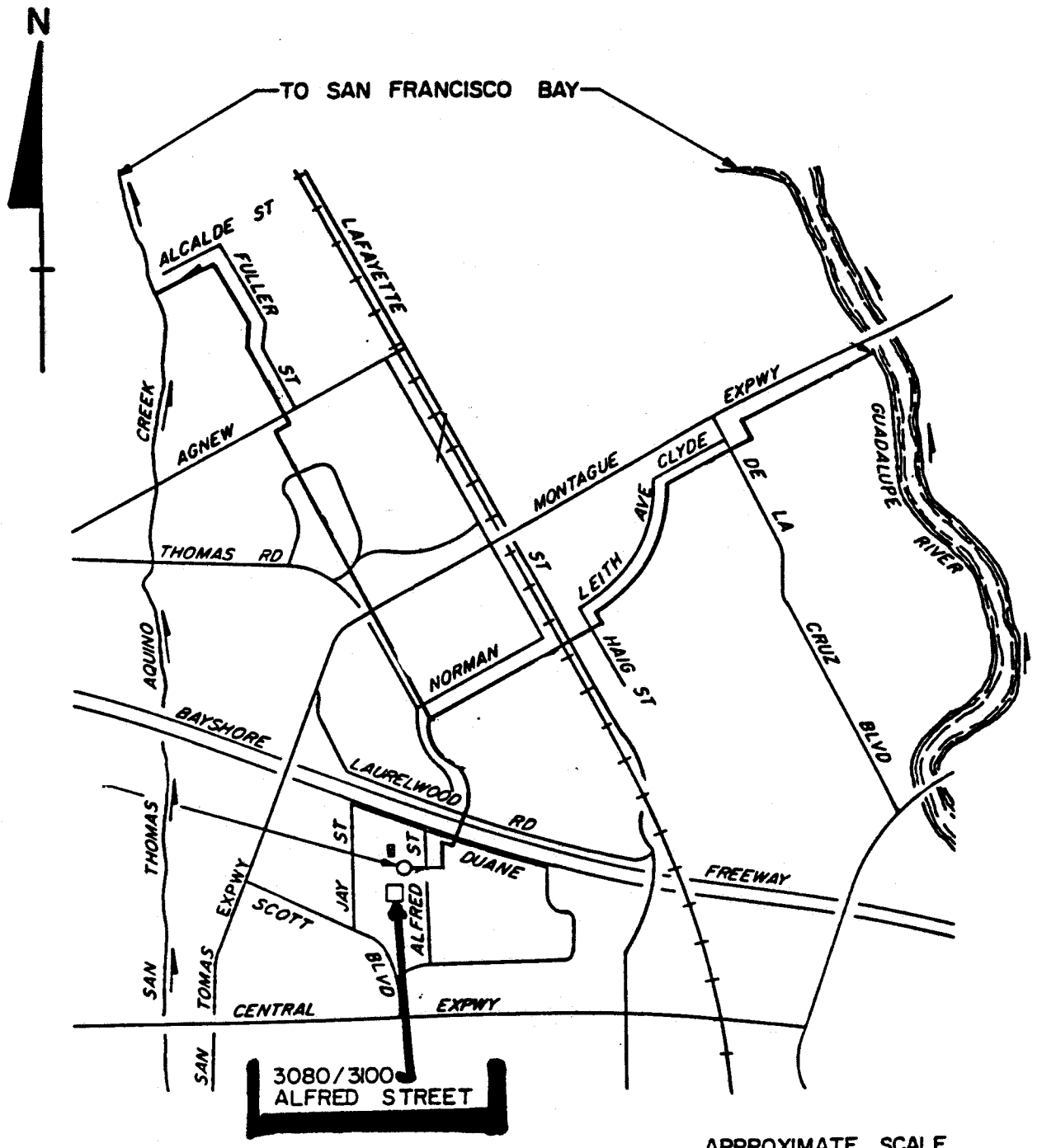
for STEVEN R. RITCHIE
EXECUTIVE OFFICER

Attachments: Figure 1
Table 1
Groundwater Self-Monitoring Program

102340

REVISIONS	NO.	DATE

DRAWN BY	M_A_M	4-9-88
CHECKED BY	MJL	4-12-88
APPROVED BY	JMS	4-12-88
DRAWING NUMBER	82-062-A132	



APPROXIMATE SCALE

3000 0 3000 FEET

SITE PLAN

PREPARED FOR

ALFRED STREET INVESTIGATION

CanonieEnvironmental

REFERENCES:

- STREET MAP OF SAN JOSE, CALIFORNIA H. M. GOUSHA COMPANY, 1985

DATE: 4-9-88	FIGURE 1	DRAWING NUMBER 82-062-A132
SCALE: AS SHOWN		

TABLE 1

Cleanup Standards for the Chemicals of Concern and Indicator Chemicals In Groundwater
(concentrations in micrograms per liter)

FAIRCHILD/MICRO POWER
ALFRED STREET FACILITY
Santa Clara , California

Compound	FEDERAL MCLG[a]	FEDERAL MCL[b]	CALIFORNIA MCL
Freon 113[g]	NA	NA	1200
1,1-dichloroethane[e]	NA	NA	5
trichloroethylene[c]	0	5	5
1,1-dichloroethylene[d]	7	7	6
cis-1,2-dichloroethylene[e]	70	70	6
1,1,1-trichloroethane[e]	200	200	200

(a) MCLG = maximum contaminant level goal. Concentrations in micrograms per liter
(b) MCL = maximum contaminant level. Concentrations in micrograms per liter
(c) Potential or probable human carcinogen
(d) Possible human carcinogen
(e) Non-carcinogen
(g) Not Classified
NA Not Available
( ) Criteria in parentheses are proposed standards
▒ Shaded numbers are Final Cleanup Standards

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

GROUNDWATER SELF-MONITORING PROGRAM

FOR

FAIRCHILD/MICRO POWER

3080/3100 Alfred Street Facility

Santa Clara, Santa Clara County

ORDER NO. 92-083

Adopted on July, 15, 1992

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

FAIRCHILD/MICRO POWER
Alfred Street Facility

GROUNDWATER SELF-MONITORING PROGRAM

A. GENERAL

Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13268, 13383 and 13387(b) of the California Water Code and this Regional Board's Resolution No. 73-16.

The principal purposes of a monitoring program by a waste discharger, also referred to as self-monitoring program, are: (1) to document compliance with waste discharge requirements and prohibitions established by this Regional Board, (2) to facilitate self-policing by the waste discharger in the prevention and abatement of pollution arising from waste discharge, (3) to develop or assist in the development of effluent or other limitations, discharge prohibitions, national standards of performance, pretreatment and toxicity standards, and other standards, and (4) to prepare water and waste water quality inventories.

B. SAMPLING AND ANALYTICAL METHODS

Sample collection, storage, and analyses shall be performed according to the EPA Method 8000 series in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," dated November 1986; or other methods approved and specified by the Executive Officer of this Regional Board.

C. REPORTS TO BE FILED WITH THE REGIONAL BOARD

1. Violations of Requirements

In the event the discharger is unable to comply with the conditions of the site cleanup requirements and prohibitions due to:

a. Maintenance work, power failures, or breakdown of waste treatment equipment, or

b. accidents caused by human error or negligence, or

c. other causes, such as acts of nature, or

d. poor operation or inadequate system design,

the discharger shall notify the Regional Board office by telephone as soon as he or his agents have knowledge of the incident and confirm this notification in writing within 5 working days of the telephone notification. The written report shall include time, date, and person notified of the incident. The report shall include pertinent information explaining reasons for the noncompliance and shall indicate what steps were taken to prevent the problem from recurring.

2. The discharger shall file a written technical report to be received at least 30 days prior to advertising for bid (or 60 days prior to construction) on any construction project which would cause or aggravate the discharge of waste in violation of requirements; said report shall describe the nature, cost, and scheduling of all action necessary to preclude such discharge.

3. Self-Monitoring Reports

Written reports shall be filed regularly for each calendar quarter, for up to one year after implementation of the expanded groundwater extraction and treatment system. The self-monitoring reports may be filed semi-annually after the second and fourth quarters thereafter; no later than July 31 and January 31 of each year.

Exceptions to semi-annual reporting shall be specified by the Executive Officer, or as follows:

For the wells which are sampled in the first and third quarters, the discharger shall notify Regional Board staff by telephone within fourteen days of receiving laboratory analytical results if (i) a chemical is detected which has not been detected previously, or (ii) if the concentration of any chemical in any well is at least one order of magnitude greater than detected the previous quarter.

The next quarterly report is due October 31, 1992. The reports shall be comprised of the following:

a. Letter of Transmittal:

A letter from the discharger transmitting self-monitoring reports should accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period and actions taken or planned for correcting any requirement violations. If the discharger has previously submitted a detailed time schedule for correcting requirement violations, a reference to this correspondence will be satisfactory. Monitoring reports and the letter transmitting reports shall be signed by a principal executive officer or a duly authorized representative of that person.

The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true and correct.

b. Results of Analyses and Observations

(1) Results from each required analysis and observation shall be submitted in the self-monitoring regular reports. Results shall also be submitted for any additional analyses performed by the dischargers at the specific request of the Board. Quarterly water level data shall also be submitted in the report.

(2) The self-monitoring reports shall include the groundwater extraction rates from each extraction well, water level data from the extraction wells, the results of any aquifer tests conducted.

(3) The self-monitoring reports shall include a discussion of unexpected operational changes which could affect performance of the extraction system, such as flow fluctuations, maintenance shutdown, etc.

(4) The self-monitoring report shall also identify the analytical procedures used for analyses either directly in the report or by reference to a standard plan accepted by the

Executive Officer. Any special methods shall be identified and should have prior approval of the Board's Executive Officer.

(5) The discharger shall describe in the self-monitoring report the reasons for significant increases in a pollutant concentration at a well. The description shall include:

a) the source of the increase,

b) how the discharger determined or will investigate the source of the increase, and

c) what source removal measures have been completed or will be proposed.

(6) Original lab results shall be retained and shall be made available for inspection for six years after origination or until after all continuing or impending legal or administrative actions are resolved.

(7) A map or maps shall accompany the self-monitoring report, showing all sampling locations and plume contours for the predominant chemical(s), or other indicator chemicals upon request by the Executive Officer, to final cleanup levels.

(8) The discharger shall describe in the self-monitoring report the effectiveness of the actions taken to regain compliance if compliance is not achieved. The effectiveness evaluation shall include the basis of determining the effectiveness, water surface elevations and water quality data.

(9) The annual report shall be combined with the fourth quarter regular report and shall include cumulative data for the current year. The annual report for December shall also include minimum, maximum, median, and average water quality data for the year, a summary of water level data, and GC/MS results. The report shall contain both tabular and graphical summaries of historical monitoring data.

d. SMP Revisions:

Additional long term or temporary changes in the sample collection frequency and routine chemical analysis may become warranted as monitoring needs change. These changes shall be based on the following criteria and shall be proposed in a self-monitoring report. The changes shall be implemented no earlier than 45 days after the self-monitoring report is submitted for review unless approved in writing.

Criteria for SMP revision:

(1) Discontinued analysis for a routine chemical parameter for a specific well after a two-year period of below detection limit values for that parameter.

(2) Changes in sampling frequency for a specific well after a two-year period of below detection limit values for all chemical parameters from that well.

(3) Temporary increases in sampling frequency or changes in requested chemical parameters for a well or group of wells because of a change in data needs (e.g., evaluating groundwater extraction effectiveness or other remediation strategies).

(4) Add routine analysis for a chemical parameter if the parameter appears as an additional chromatographic peak in three consecutive samples from a particular well.

(5) Alter sampling frequency based on evaluation of collective data base.

D. DESCRIPTION OF SAMPLING STATIONS

All existing and future shallow, intermediate and deep aquifer monitoring and extraction wells as appropriate. See Table I and Figure I (attached) for monitoring and extraction wells installed at the time of the adoption of this SMP.

E. SCHEDULE OF SAMPLING AND ANALYSES

1. The schedule of sampling and analysis shall be that given in Table I (attached).

2. In addition, if a previously undetected compound or peak is detected in a sample from a well, a second sample shall be taken within a week after the results from the first sample are available. All chromatographic peaks detected in two consecutive samples shall be identified and quantified in the self-monitoring report.

3. Groundwater elevations shall be obtained on a quarterly basis from all wells at the site and submitted in the self-monitoring report with the sampling results.

4. Well depths shall be determined on an annual basis and compared to the depth of the well as constructed. If greater than ninety percent of screen is covered, the discharger shall clear the screen by the next sampling.

I, Steven R. Ritchie, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Regional Board's Resolution No. 73-16 in order to obtain data and document compliance with site cleanup requirements established in Regional Board Order No. 92-083.

2. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the discharger, and revisions will be ordered by the Executive Officer or Regional Board.

3. Was adopted by the Board on July 15, 1992.

8/6/92
Date

for
Steven R. Ritchie
Executive Officer

Attachments: Table I - Sampling Schedule
Figure I - Well Location Map

TABLE I

SCHEDULE FOR GROUNDWATER SAMPLING AND ANALYSIS
FAIRCHILD/MICRO POWER - ALFRED STREET FACILITY

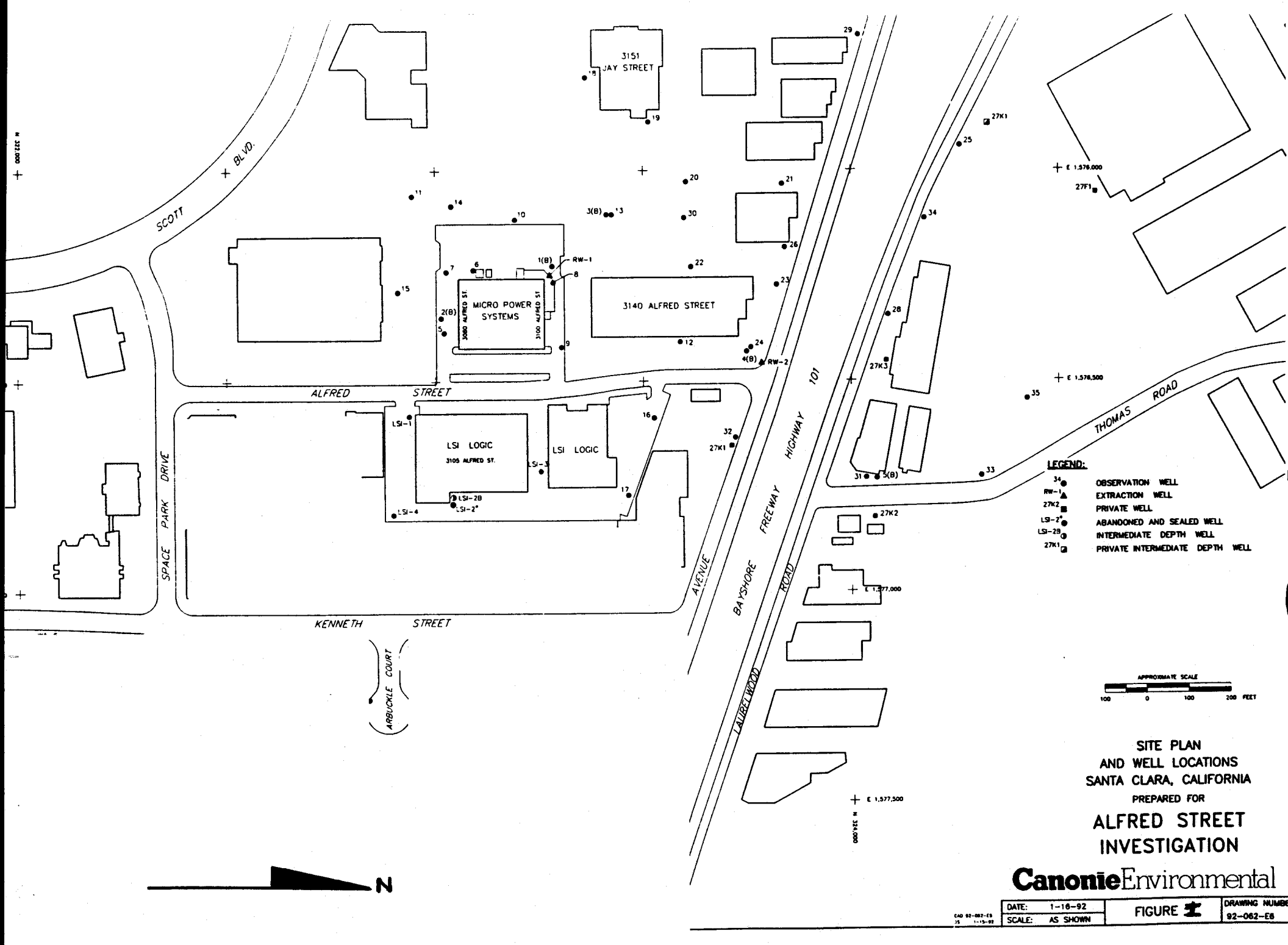
WELL NO.	SAMPLING FREQUENCY*	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
LSI-1	A	--	8240[a]	--	--
LSI-3	A	--	8010	--	--
LSI-4	A	--	8010	--	--
5	SA	--	8010	--	8010
6	SA	--	8010	--	8010
7	A	--	8010	--	--
8	Q	8010	8240[a]	8010	8010
9	SA	--	8010	--	8010
10	SA	--	8010	--	8010
11	A	--	8240[a]	--	--
12	SA	--	8240[a]	--	8010
13	SA	--	8010	--	8010
14	A	--	8010	--	--
15	A	--	8010	--	--
16	A	--	8010	--	--
17	A	--	8010	--	--
18	A	--	8010	--	--
19	A	--	8010	--	--
20	SA	--	8240[a]	--	8010
21	Q	8010	8010	8010	8010
22	SA	--	8010	--	8010
23	SA	--	8010	--	8010
24	Q	8010	8010	8010	8010
25	SA	--	8010	--	8010
26	SA	--	8010	--	8010
27	A	--	8010	--	--
28	SA	--	8010	--	8010
29	A	--	8240[a]	--	--

30	Q	8010	8010	8010	8010
31	A	--	8010	--	--
32	Q	8010	8240[a]	8010	8010
33	A	--	8010	--	--
34	Q	8010	8240[a]	8010	8010
35	A	--	8010	--	--
1(B)	A	--	8010	--	--
2(B)	A	--	8010	--	--
3(B)	A	--	8240[a]	--	--
4(B)	A	--	8010	--	--
5(B)	A	--	8010	--	--
LSI-2(B)	A	--	8010	--	--
RW-1	Q	8010	8240[a]	8010	8010
RW-2	Q	8010	8240[a]	8010	8010
new well(s)	Q	8010	8240[a]	8010	8010

(a) The required annual analysis using EPA Method #8240 shall be performed in alternate years with the required analyses using EPA Method # 8010

* water levels shall be measured and reported for each well every Quarter; pH and specific conductivity shall be measured and reported for each well at each sampling event

Q Quarterly sampling (once every three months)
S Semi-annual sampling (once every six months to reflect wet and dry seasonal conditions)
A Sampling once per year (to reflect wet seasonal conditions)



SITE PLAN AND WELL LOCATIONS SANTA CLARA, CALIFORNIA

PREPARED FOR

ALFRED STREET INVESTIGATION

Canonie Environmental

DATE: 1-16-92	FIGURE 1	DRAWING NUMBER 92-062-E6
SCALE: AS SHOWN		